

AMENDMENT TO THE CLAIMS

The listing of claims will replace all prior versions and listings in the application.

Listing of Claims:

1. (Currently Amended) A gas burner comprising:
  - a) a burner body including:
    - i) a lower housing said lower housing having a sidewall;
    - ii) an element defining a combustion surface attached to said lower housing;
    - iii) a diffuser/reflector positioned below said element;
  - b) an inlet conduit communicating with said burner body through which a gas/air mixture is delivered to said burner body in a region located below said diffuser/reflector; and,
  - c) said diffuser/reflector including a plurality of openings, each opening having an overhanging guide plate;
  - d) said diffuser/reflector having a somewhat inverted V-shaped configuration, and said openings are arranged in sets of parallel rows and said diffuser/reflector including a second plurality of openings located in an upper region of said diffuser/reflector which do not include associated guide plates;
  - e) said openings of said parallel rows being oriented to direct said gas/air mixture in a direction generally toward said sidewall, said direction being generally transverse to an axis of said inlet conduit.

2. (Canceled).

3. (Canceled)

4. (Previously Presented) The burner of claim 1 wherein said diffuser/reflector is a sheet metal stamping, and said guide plates are formed by partially stamping through the sheet metal in order to form outwardly extending elements that define the associated overhanging guide plates.

5. (Previously Presented) A gas burner comprising:

- a) a burner body including:
  - i) a lower housing;
  - ii) an element defining a combustion surface attached to said lower housing;
- b) an inlet conduit communicating with said burner body through which a gas/air mixture is delivered to said burner body in a region located adjacent an inside surface of said combustion surface defining element; and,
- c) said combustion surface defining element being radiused and including a plurality of integrally formed rigidizing ribs;
- d) said combustion surface defining element having said inside surface exposed to uncombusted gas/air mixture, said gas/air mixture being combusted on said combustion surface defining element and outside said burner body region.

6. (Previously Presented) The burner of claim 5 wherein said lower housing includes integrally formed flanges adapted to receive longitudinal edges of said combustion surface defining element by which said combustion surface element is secured, at least partially, to said lower housing.

7. (Previously Presented) The burner of claim 6 wherein said flanges are oriented in a tangential relationship with respect to said combustion surface defining element.

8. (Previously Presented) The burner of claim 7 wherein said lower housing comprises a channel member having upwardly directed sides, said flanges being defined at upper edges of said sides and said lower housing further includes a pair of endcaps secured to opposite ends of said channel member.

9. (Previously Presented) The burner of claim 8 wherein said endcaps include arcuate flanges for receiving and securing side edges of said combustion surface defining element.

10. (Previously Presented) The burner of claim 8 wherein one of said endcaps includes an aperture through which said inlet conduit extends, said endcap being captured between a pair of upset ridges formed on said inlet tube, whereby said inlet tube is secured to said burner body.

11. (Previously Presented) The burner of claim 1 wherein said inlet conduit includes a segment that extends into an interior region of said burner body and has a discharge end that is cut on an angle.

12. (Previously Presented) The burner of claim 11 wherein said angle is substantially 45°.

13. (Previously Presented) The burner of claim 1 wherein said burner body is substantially rectangular in shape.

14. (Previously Presented) The gas burner of claim 5 wherein said combustion surface defining element comprises a screen made from a high temperature steel alloy wire cloth having a twill weave of 30x32 mesh.

15. (Previously Presented) A premix gas burner for use in a water heater, said water heater including a wall at least partially defining a combustion chamber and an access opening in said wall, comprising:

- a) a burner body including a lower housing and an element defining a combustion surface that is attached to said lower housing;
- b) an inlet conduit communicating with said burner body through which a combustible gas and combustion air mixture is delivered to said burner body in a region located below said combustion surface defining element said inlet conduit supplying at least 100% of the combustion air needed for combustion of said combustible gas; and,
- c) an access door for closing off said access opening when said burner is in its installed position within said water heater, said access door secured to an inlet end of said inlet conduit;

d) said inlet end of said inlet conduit including an upset ridge that abuts an inside surface surrounding an opening in said door through which said inlet conduit extends and an outwardly extending flare that abuttably engages an outside surface of said door, whereby said door is secured to said inlet conduit.

16. (Previously Presented) The burner of claim 10 wherein said one endcap includes an axial flange around said aperture that is captured between said pair of upset ridges formed on said inlet tube.

17. (Previously Presented) The gas burner of claim 15 further including mounting structure attached to said door for mounting a gas orifice a spaced distance from said inlet end of said inlet conduit.

18. (Previously Presented) The gas burner of claim 17 wherein said inlet end of said inlet conduit is secured to said door in a door region having a predetermined profile that is unrelated to the radius of said access opening.

19. (Previously Presented) The gas burner of claim 15 wherein said inlet conduit is secured to an endcap portion forming part of said burner body, said inlet conduit including a pair of upset ridges located on either side of a wall forming part of said endcap portion.

20. (Currently Amended) A diffuser/reflector for use in a gas burner of the type that includes a burner body having a sidewall and a screen element attached to said burner body that defines a combustion surface and an inlet conduit

for delivering a gas/air mixture to a region below said screen element, said diffuser/reflector comprising a structure including a first plurality of openings, each opening of said plurality including a transversely extending overhanging element, said elements being arranged to reflect heat away from said lower housing and to encourage gas/air mixing as said gas/air mixture travels from said lower housing to said combustion surface, said overhanging elements arranged to direct the flow of said gas/air mixture in a transverse direction away from an axis of said inlet conduit, and towards said sidewall of said burner body said structure further including another plurality of openings located in an another region of said structure, said other plurality of openings forming part of an unobstructed flow path for said gas/air mixture to said combustion surface.

21. (Previously Presented) The diffuser/reflector of claim 20 wherein said structure is generally arcuate.

22. (Canceled)

23. (Previously Presented) The diffuser/reflector of claim 20 wherein said structure includes a non-apertured section that is positioned in said gas burner, such that it is located in a region of said gas burner that is remote from an inlet end of said gas burner.

24. (Previously Presented) The diffuser/reflector of claim 20 wherein said structure is rectangular in shape when viewed in plan and is intended to fit within a rectangularly shaped burner housing.

25. (Previously Presented) The diffuser/reflector of claim 20 wherein said openings and overhanging elements are arranged, such that they form a stair cased profile.

26. (Previously Presented) The diffuser/reflector of claim 20 wherein said structure is inverted V-shaped.

27. (Previously Presented) A premix gas burner for use in a water heater, said water heater including a wall at least partially defining a combustion chamber and an access opening in said wall, comprising:

- a) a burner body including a lower housing and an element defining a combustion surface that is attached to said lower housing;
- b) an inlet conduit communicating with said burner body through which a combustible gas and combustion air mixture is delivered to said burner body in a region located below said combustion surface defining element said inlet conduit supplying substantially all combustion air needed for combustion of said combustible gas ; and,
- c) a bulkhead/access door for closing off said access opening when said burner is in its installed position within said water heater, said bulkhead/access door secured to an inlet end of said inlet conduit;
- d) said inlet end of said inlet conduit being secured to said bulkhead/access door in a region defining a mounting location having a predetermined profile that corresponds to said inlet end of said inlet conduit but that is unrelated to a radius of said access opening.

28. (Previously Presented) The gas burner of claim 27 wherein said inlet end of said inlet conduit includes an upset ridge that abuts an inside surface of mounting location region and an outwardly extending flare that abuttably engages an outside surface of said region whereby said bulkhead/access door is secured to said inlet conduit.

29. (Previously Presented) The gas burner of claim 27 further including mounting structure attached to said mounting location, said mounting structure supporting a gas orifice a spaced distance from said inlet end of said inlet conduit.

30. (Previously Presented) The gas burner of claim 29 wherein said mounting structure includes a rodent shield.

31. (Previously Presented) The gas burner of claim 29 wherein said mounting structure comprises an element having a plurality of legs, said legs extending from a seat, distal ends of said legs being secured to said region defining a mounting location on said bulkhead/access door, at spaced locations.

32. (Previously Presented) The gas burner of claim 31 wherein said element further includes a deflecting tab which facilitates the assembly of a water heater that utilizes said gas burner.

33. (Previously Presented) The gas burner of claim 27 wherein said combustion chamber includes at least one port through which secondary combustion air is admitted into said combustion chamber.

Claims 34-45 (Previously Canceled)

46. (Previously Presented) The gas burner of claim 1 wherein said openings of said parallel rows are arranged in first and second sets and direct said gas/air mixture in first and second transverse directions respectively, said first transverse direction being substantially opposite the second transverse direction.

47. (Previously Presented) The diffuser/reflector of claim 20 wherein said transversely extending overhanging elements are arranged in first and second sets, one of said sets directing the gas/air mixture in a first transverse direction away from said axis of said inlet conduit, the other set of said elements directing said gas/air mixture in a second transverse direction from said axis of said inlet conduit, said first and second transverse directions being substantially opposite each other.

48. (Previously Presented) The gas burner of claim 1 wherein said lower housing is generally rectangular in shape and has a transverse dimension that is less than its longitudinal dimension, the transverse dimension being transverse to said axis of said inlet conduit.

49. (Previously Presented) The gas burner of claim 5 wherein said rigidizing ribs are oriented in a direction that is substantially transverse to an axis of said inlet conduit.